Volunteer Lake Assessment Program Individual Lake Reports

SUNAPEE LAKE, LITTLE, NEW LONDON, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	3,968	**Max. Depth (m):**	13.1	**Flushing Rate (yr^{-1}):**	1.1
Surface Area (Ac.):	472	**Mean Depth (m):**	4.4	**P Retention Coef:**	0.66
Shore Length (m):	9,500	**Volume (m^3):**	8,449,500	**Elevation (ft):**	1220

TROPHIC CLASSIFICATION

Year	Trophic class
1994	MESOTROPHIC
2008	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

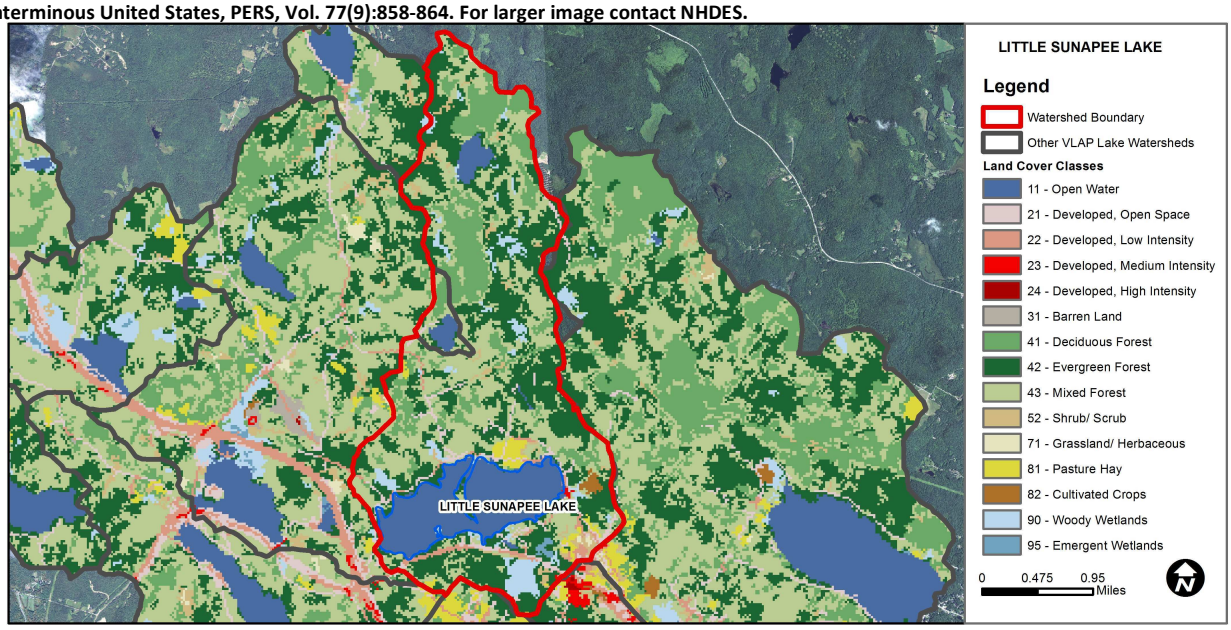
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

LITTLE LAKE SUNAPEE - COLBY LODGE BEACH	E. coli	No Data	No Data for this parameter.
LITTLE SUNAPEE LAKE - BUCKLIN TOWN BEACH	E. coli	Slightly Bad	Slightly exceeds criteria.
LITTLE SUNAPEE LAKE - BUCKLIN TOWN BEACH	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	14.6	Barren Land	0	Grassland/Herbaceous	0.15
Developed-Open Space	2.93	Deciduous Forest	12.95	Pasture Hay	1.4
Developed-Low Intensity	1.5	Evergreen Forest	32.03	Cultivated Crops	0.36
Developed-Medium Intensity	0.1	Mixed Forest	27.97	Woody Wetlands	3.86
Developed-High Intensity	0	Shrub-Scrub	1.83	Emergent Wetlands	0.22

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
LITTLE LAKE SUNAPEE, NEW LONDON, NH
2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were low in June and September and less than state median. Historical trend analysis indicates stable chlorophyll with moderate variability between years.
- **CONDUCTIVITY/CHLORIDE:** Deep spot conductivity and epilimnetic chloride was slightly greater than the state median, however was not above levels of concern. Historical trend analysis indicates relatively stable epilimnetic conductivity with high variability between years.
- **TOTAL PHOSPHORUS:** June deep spot phosphorus levels were very low. September deep spot phosphorus increased to average levels in the Metalimnion and Hypolimnion. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years.
- **TRANSPARENCY:** Transparency was lower in June potentially due to above average rainfall and stormwater runoff. Historical trend analysis indicates relatively stable transparency with high variability between years.
- **TURBIDITY:** Metalimnetic and hypolimnetic turbidity were slightly elevated in September possibly due to a layer of algae in the metalimnion and organic matter in the hypolimnion.
- **PH:** pH levels were lower than desirable range 6.5 – 8.0 units in the metalimnion and hypolimnion. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years.
- **RECOMMENDED ACTIONS:** Continue chloride monitoring and assessment program. Identify areas of stormwater erosion in the watershed and implement best management practices to reduce stormwater runoff. Refer to the Little Lake Sunapee Sub-Watershed report for tributary data interpretation. Keep up the great work!

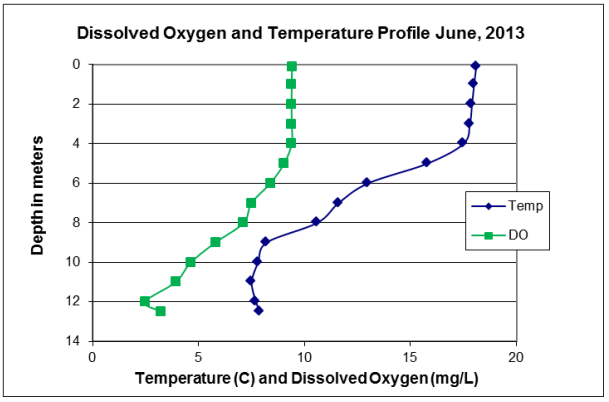


Table 1. 2013 Average Water Quality Data for LITTLE SUNAPEE LAKE

Station	Alk.	Chlor-a	Chloride	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	ug/l	m		ntu	
						NVS	VS		
Epilimnion	4.55	3.33	19	68.0	5	3.77	4.02	0.57	6.75
Metalimnion				69.2	7			1.14	6.44
Hypolimnion				73.8	9			1.39	6.03

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
Conductivity	Stable	Trend not significant; data highly variable.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.